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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/791,432

Filing Date: March 02, 2004

Appellant(s): BENZ ET AL.

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John S. Economou  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 04 May 2009 appealing from the Office action mailed 20 May 2008.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

6,878,095	Shigyo	04-2005
5,547,438	Nozaki et al.	08-1996

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 6,878,095 to Shigyo in view of U. S. Patent No. 5,547,438 to Nozaki et al.

***With Respect to Claims 1 and 18:***

*Shigyo* (Figs. 1-5; column 2, line 21 – column 7, line 4) discloses an automatic-clutch control system of a transmission for a vehicle comprising:

- A drive motor (*Shigyo* i.e., column 2, lines 41-42, being the internal combustion engine);
- An automatic/manual transmission (*Shigyo* i.e., Fig. 1 and column 4, lines 30-33);
- An automatic clutch (*Shigyo* i.e., Fig. 1, element 4) connecting the drive motor and the manual/automatic transmission (i.e., Fig. 1);
- A controller (*Shigyo* i.e., Fig. 1, element 31) capable of automatically controlling the automatic manual transmission; and

- Wherein, when the gas pedal is release (Shigyo i.e., column 5, lines 9-10), the controller automatically disengages the clutch when the deceleration becomes greater than or equal to a preset deceleration (Shigyo i.e., column 6, lines 45-48), to change the engine braking mode to a free-wheeling mode (Shigyo i.e., column 5, line 31 – column 6, line 53); and
- Wherein, implicitly, when the gas pedal is operated and/or the deceleration is less than the preset deceleration, the controller automatically engages/reengages the clutch to change the free-wheeling mode to the engine braking mode (Shigyo i.e., column 5, line 5 – column 6, line 53).

*Shigyo* does not explicitly disclose:

- Reengaging the clutch when the gas pedal is operated in the free-wheeling mode only when the engine rotational speed is above the transmission input rotational speed.

*Nozaki* (i.e., column 6, line 19 – column 11, line 45), on the other hand, teaches a control apparatus for controlling an engine of a motor vehicle.

- Wherein Nozaki (i.e., column 11, lines 38-44) provides a general teaching that the clutch (24) should be engaged when the engine speed ( $N_E$ ) is higher than the transmission input speed ( $N_T$ ) so that the damper (23) can desirably absorb an engaging shock of input and output coupling members of the clutch (24) (Nozaki i.e., column 10, line 66 – column 11, line 45).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Shigyo such that the clutch can be engaged/reengaged when the gas pedal is operated in the free-wheeling mode only when the engine rotational speed is above the transmission input rotational speed, in view of Nozaki, in order to effectively implement smooth engagement/reengagement of the clutch and eliminate any engaging shock associated with the clutch operations (Nozaki, i.e., column 11, lines 28-45).

Since all the claimed elements were known in the prior art, one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

With Respect to Claim 2:

- Wherein the clutch is disengaged to implement the free-wheeling mode (Shigyo, i.e., column 6, lines 45-53).

With Respect to Claims 3 and 20:

- Wherein the automatic clutch is disengaged to implement the free-wheeling mode when a transmission gear is equal to a maximum free-wheeling gear (Shigyo, i.e., column 6, lines 45-53, when the clutch 4 is completely disengaged, the gear ratio, at which the clutch 4 is completely disengaged, is the maximum free-wheeling gear).

*With Respect to Claim 4:*

- Wherein the automatic clutch (4) is disengaged to implement the free-wheeling mode when a gas pedal has not been operated (Shigyo i.e., column 6, lines 45-53).

*With Respect to Claim 5:*

- Wherein the automatic clutch (4) is disengaged to implement the free-wheeling mode when an idling switch is activated (Shigyo i.e., column 5, line 5 – column 6, line 53, when the gas pedal is released and the idle switch 34 is set at ON state).

*With Respect to Claim 6:*

*Note:*

It should be noted that, in this instant case, in order to obtain negative torque/less than zero torque through the clutch, the clutch must be engaged.

When the clutch, in this instant case, between the engine and the transmission, is disengaged (no transmitting of torque), the desired torque should always be equal to zero.

- Wherein the automatic clutch (4) is disengaged to implement the free-wheeling mode when a driver's desired torque is zero (Shigyo i.e., column 5, line 62 - column 6, line 6).

*With Respect to Claims 7 and 21:*

- Wherein the clutch is disengaged to implement the free-wheeling mode when a driving speed is less than the maximum free-wheeling speed (Shigyo i.e., column 6, lines 7-53; it is inherent that the clutch 4 must be disengaged and the free-

wheeling mode must also be implemented when the driving speed is lower than a minimum driveable speed of the presently engaged transmission gear, which is less than the maximum speed that the free-wheeling mode can be implemented for the presently engaged transmission gear, in order to prevent the engine from being stalled).

*With Respect to Claims 8 and 22:*

- Wherein the clutch is disengaged to implement the free-wheeling mode when no downhill driving is detected (Shigyo i.e., column 6, lines 45-53, the free-wheeling mode is implemented based on a preset deceleration; and, there is no mention of downhill driving detection as a condition for implementing the free-wheeling mode).

*With Respect to Claim 9:*

- Wherein the automatic clutch is disengaged to implement the free-wheeling mode when the automatic manual transmission is shifted to an automatic driving program (Shigyo i.e., column 4, line 66 – column 5, line 3)

*With Respect to Claim 10:*

- Wherein the automatic clutch is disengaged to implement the free-wheeling mode when a creep function is not activated (Shigyo i.e., column 6, lines 45-53, inherently discloses this limitation because it would be impossible to activate the “creep function” when the automatic clutch 4 is completely disengaged).

*With Respect to Claim 11:*

- Wherein the automatic clutch is disengaged to implement the free-wheeling mode when there is no block of the free-wheeling function (Shigyo i.e., column 5, line 31 – column 6, line 53; the free-wheeling mode is implemented based on a preset deceleration; there is no block in implementing the free-wheeling mode when deceleration is greater than a preset deceleration).

*With Respect to Claim 12:*

- Wherein the change to the free-wheeling mode is blocked when a driving speed is greater than the maximum free-wheeling speed (Shigyo i.e., column 5, line 37-44, when step S8 is negative and the routine proceeds to step S7).

*With Respect to Claim 13:*

- Wherein the change to the free-wheeling mode is blocked when no automatic driving program has been activated (Shigyo i.e., column 4, line 66 – column 5, line 4, when step S2 is negative and the routine proceeds to step S7).

*With Respect to Claim 14:*

- Wherein the change to the free-wheeling mode is blocked when a hill driving program has been activated (Shigyo i.e., column 5, lines 5-12, when step S3 is negative and the routine proceeds to step S7).

With Respect to Claim 15:

- Wherein a block of the change to the free-wheeling mode is inherently deactivated when a gas pedal is operated (Shigyo i.e., column 5, lines 5-12, when step S3 is negative and the routine proceeds to step S7).

With Respect to Claim 16:

- Wherein a block of the change to the free-wheeling mode is inherently deactivated when there is a change from a manual driving program to an automatic driving program (Shigyo i.e., column 4, line 66 – column 5, line 4).

With Respect to Claim 17:

- Wherein a block of the change to the free-wheeling mode is inherently deactivated when there is a change in gear with that is less than or equal to a maximum free-wheeling gear (Shigyo i.e., column 4, lines 45-63).

With Respect to Claim 19:

- Wherein the drive train is a motor vehicle drive train (Shigyo i.e., column 2, lines 21-27).

**(10) Response to Argument**

Applicants' arguments with respect to claims 1 and 18:

First, applicants argue that Shigyo does not teach the determination of the engine rotational speed or the transmission input rotational speed; and therefore, Shigyo is not capable of addressing the step of "reengaging the clutch when a gas

pedal is operated in the free-wheeling mode only when an engine rotational speed is above a transmission input rotational speed" as recited in claim 1. Examiner respectfully disagrees because in Shigyo, i.e., column 6, lines 21-53, the automatic clutch 4 is put in *a slip state*. The input of the clutch 4, as shown in Fig. 1 of Shigyo, is connected to the crankshaft 5 of the engine and the output of the clutch 4 is connected to the input shaft 1 of the transmission. The slip state is determined as the speed difference between the input speed, which is the speed of the engine, and the output speed, which is the input speed of the transmission, of the clutch 4. Accordingly, as set forth above, Shigyo does teach the determination of the engine rotational speed and the transmission input rotational speed; and therefore, Shigyo is capable of addressing the step of "reengaging the clutch when a gas pedal is operated in the free-wheeling mode only when an engine rotational speed is above a transmission input rotational speed" as recited in claims 1 and 18.

Second, applicants argue that the clutch of Nozaki is a lockup clutch of a torque converter, which is different from the presently claimed automated clutch; and therefore, it would be improper to combine with Shigyo. Examiner respectfully disagrees because the present claim 1, lines 1-2, and the present claim 18, line 4, only require the clutch to be located between the drive motor and the transmission. The clutch 24 as shown in Fig. 5 of Nozaki is located between the drive motor and the transmission. Moreover, Examiner only utilizes a general teaching that a clutch should be engaged when the engine speed is higher than the

transmission input speed so that the damper can desirably absorb an engaging shock of input and output coupling members of the clutch (Nozaki i.e., column 10, line 66 – column 11, line 45) and applies it to Shigyo in order to improve the engagement of clutch 4 of Shigyo.

Accordingly, as set forth above, the applied references meet the claimed limitations.

Applicants' argument with respect to claim 20:

Applicants argue that Shigyo does not teach or show “the automatic clutch is disengaged to implement the free-wheeling mode when a transmission gear is equal to a maximum free-wheeling gear”. Examiner respectfully disagrees because Shigyo, i.e., column 6, lines 45-53, teaches that, when the clutch 4 is completely disengaged, the gear ratio, at which the clutch 4 is completely disengaged, is the maximum free-wheeling gear. Accordingly, as set forth above, the applied references meet the claimed limitations.

Applicants' argument with respect to claim 21:

Applicants argue that Shigyo does not teach or show “the clutch is disengaged to implement the free-wheeling mode when a driving speed is less than the maximum free-wheeling speed”. Examiner respectfully disagrees because Shigyo, i.e., column 6, lines 7-53, teaches that the clutch 4 must be disengaged and the free-wheeling mode must also be implemented when the driving speed is lower than a minimum driveable speed of the presently engaged transmission gear, which is less than the maximum speed that the free-wheeling

mode can be implemented for the presently engaged transmission gear, in order to prevent the engine from being stalled. Accordingly, as set forth above, the applied references meet the claimed limitations.

**Applicants' argument with respect to claim 22:**

Applicants argue that Shigyo does not teach or show "the clutch is disengaged to implement the free-wheeling mode when no downhill driving is detected". Examiner respectfully disagrees because Shigyo, i.e., column 6, lines 45-53, teaches that the free-wheeling mode is implemented based on a preset deceleration. There is no mention of downhill driving detection as a condition for implementing the free-wheeling mode. Accordingly, as set forth above, the applied references meet the claimed limitations.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/David D. Le/

Primary Examiner

Art Unit 3655

07/25/2009

Conferees:

David D. Le /DDL/

Charles A. Marmor /CAM/

Marc Q. Jimenez /MJ/